

REMARKS

Claims 1, 3-15, 17-23, and 25 are pending in the present application.

Reconsideration and allowance of pending claims 1, 3-15, 17-23, and 25 in view of the following remarks are requested.

In the Office Action dated November 18, 2003, the Examiner has *finally rejected* claims 1, 3-15, 17-23, and 25 pending in the application on the basis of new ground(s) of rejection and newly cited art. Applicant respectfully requests reconsideration and withdrawal of the finality of the rejection of the Office Action dated November 18, 2003.

A good and sufficient reason why the present response is necessary and was not earlier presented is that an entirely new reference has been cited in the present final rejection dated November 18, 2003 (37 CFR §1.116(c)). The new reference is Shao et al. (USPN 6,156,602) (hereinafter “Shao”), which is for the first time brought to Applicant’s attention by means of the present *final rejection* dated November 18, 2003. The new reference, i.e., Shao, was not cited in the present application prior to the instant final rejection. Since Shao is a reference upon which the Examiner has now relied, Applicant believes that it would be manifestly unfair for the Patent Office not to consider Applicant’s arguments, which are necessitated due to the newly cited reference, Shao.

The Examiner has rejected claims 1, 3-15, 17-23, and 25 under 35 USC §103(a) as being unpatentable over U.S. patent number 5,436,177 to Chiara Zaccherini (“Zaccherini”) in view of Shao. For the reasons discussed below, Applicant respectfully

submits that the present invention, as defined by independent claims 1 and 14, is patentably distinguishable over Zaccherini and Shao, singly or in combination.

The present invention, as defined by independent claim 1, teaches, among other things, doping a portion of a layer over a field oxide region with a third dopant so as to form a high-doped region the layer over the field oxide region and fabricating a contact region for a high resistivity resistor over the high-doped region. As disclosed in the present application, a first dopant, e.g. an N type dopant, is utilized to implant a gate region of a polycrystalline layer, while a doping barrier prevents the first dopant from being implanted in a resistor region of the polycrystalline layer. As disclosed in the present application, the doping barrier is removed and a second dopant, e.g. a P type dopant, is implanted in the polycrystalline layer to determine the resistivity of a resistor subsequently formed in the resistor region of the polycrystalline layer.

As disclosed in the present application, after formation of a high resistivity resistor in the resistor region of the polycrystalline layer, a silicide blocking layer is formed over the resistor region while leaving a portion of the resistor region uncovered by the silicide blocking layer. P+ doped regions are then formed by heavily doping the uncovered portions of the resistor region of the polycrystalline layer with a third dopant, e.g. a P type dopant and silicide contact regions are formed over the P+ regions so as to provide electrical connectivity for the high resistivity resistor. As a result, the present invention advantageously achieves a high resistivity resistor having a low fabrication cost and improved electrical connectivity.

In contrast to the present invention as defined by independent claim 1, Zaccherini does not teach, disclose, or suggest doping a portion of a layer over a field oxide region with a third dopant so as to form a high-doped region the layer over the field oxide region and fabricating a contact region for a high resistivity resistor over the high-doped region. Zaccherini specifically discloses forming P doped resistors in predetermined area 8 of polycrystalline layer 7 overlying field oxide 5. See, for example, Zaccherini, column 3, lines 15-23. However, Zaccherini fails to teach, disclose, or suggest doping a portion of a layer over a field oxide region with a dopant so as to form a high-doped region in the layer over the field oxide region and fabricating a contact region for a high resistivity resistor over the high-doped region. Furthermore, Zaccherini provides no motivation for forming a high-doped region in the layer over the field oxide region. Moreover, Zaccherini does not even mention any method of completing the formation of resistors in predetermined area 8 of polycrystalline layer 7, such as providing contacts for the resistors.

In contrast to the present invention as defined by independent claim 1, Shao does not teach, disclose, or suggest doping a portion of a layer over a field oxide region with a third dopant so as to form a high-doped region the layer over the field oxide region and fabricating a contact region for a high resistivity resistor over the high-doped region. Shao specifically discloses performing N+ implant 18 into poly 2 layer 16 to form the conductivity level of an NMOS poly gate and also to control the value of a load resistor, i.e. load resistor 38, which is also formed in poly 2 layer 16 over field oxide region 12.

See, for example, column 5, lines 7-26 and Figures 1 and 5 of Shao. However, in Shao, a doping barrier is not utilized above the layer over field oxide region 12, i.e. the resistor region, as specified in independent claim 1. Furthermore, Shao does not teach, disclose, or suggest doping poly 2 layer 16 with a second dopant so as to form a high resistivity resistor in poly 2 layer 16 over field oxide region 12.

In Shao, after load resistor 38 has been formed, an N+ implant of contact regions 72 and 74 of load resistor 38 is performed. See, for example, column 7, lines 64-65 and Figure 6 of Shao. However, Shao fails to teach, disclose, or suggest utilizing a first dopant to dope a transistor gate region, utilizing a second dopant to form a high resistivity resistor in a layer over a field oxide region, and utilizing a third dopant to form a high-doped region in the layer over the field oxide region, where the first dopant and the second and third dopants have an opposite conductivity type and the second and third dopants have the same conductivity type.

For the foregoing reasons, Applicant respectfully submits that the present invention, as defined by independent claim 1, is not suggested, disclosed, or taught by Zaccherini and Shao, singly or in combination. As such, the present invention, as defined by independent claim 1, is patentably distinguishable over Zaccherini and Shao. Thus claims 3-13 depending from independent claim 1 are, *a fortiori*, also patentably distinguishable over Zaccherini and Shao for at least the reasons presented above and also for additional limitations contained in each dependent claim.

The present invention, as defined by independent claim 14, teaches, among other things, doping a portion of a resistor region of a polycrystalline silicon layer with a third dopant so as to form a high-doped region in the resistor region, and fabricating a contact region over the high-doped region in the resistor region of the polycrystalline silicon layer, where the contact region is electrically connected to the resistor region.

Independent claim 14 includes similar limitations as recited in independent claim 1.

Thus, for similar reasons as discussed above, Applicant respectfully submits that the present invention, as defined by independent claim 14, is not suggested, disclosed, or taught by Zaccherini and Shao. As such, the present invention, as defined by independent claim 14, is patentably distinguishable over Zaccherini and Shao. Thus claims 15, 17-23, and 25 depending from independent claim 14 are, *a fortiori*, also patentably distinguishable over Zaccherini and Shao for at least the reasons presented above and also for additional limitations contained in each dependent claim.

Based on the foregoing reasons, the present invention, as defined by independent claims 1 and 14 and claims depending therefrom, is patentably distinguishable over the art cited by the Examiner. Thus, claims 1, 3-15, 17-23, and 25 pending in the present application are patentably distinguishable over the art cited by the Examiner. As such, and for all the foregoing reasons, an early allowance of claims 1, 3-15, 17-23, and 25 pending in the present application is respectfully requested.

Respectfully Submitted,
FARJAMI & FARJAMI LLP

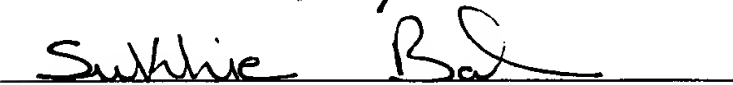
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